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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,693	11/21/2003	Kenneth O. McElrath	3006.002000/KDG	1355
23720	7590	11/14/2005	EXAMINER	
		WILLIAMS, MORGAN & AMERSON, P.C.		WALFORD, NATALIE K
		10333 RICHMOND, SUITE 1100	ART UNIT	PAPER NUMBER
		HOUSTON, TX 77042		2879

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/719,693	MCELRATH ET AL. 
	Examiner	Art Unit
	Natalie K. Walford	2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21 November 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-23 is/are pending in the application.
 - 4a) Of the above claim(s) 11-23 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 21 November 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/04.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-10, drawn to an electron emitter, classified in class 313, subclass 310.
- II. Claims 11-23, drawn to a method for making a carbon nanotube electron emitter, classified in class 445, subclass 24.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the method can be made by another and materially different process.

The inventions are distinct, each from the other because of the following reasons:

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Kenneth Goodman on October 11, 2005 a provisional election was made without traverse to prosecute the invention of an electron

emitter, claims 1-10. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 10, the Applicant fails to clearly and distinctly point out claim dependence. The Examiner notes, that for examining purposes, the claim will be dependent on claim 9.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Jin (US 6,465,132).

Regarding claim 1, Jin discloses an electron emitter comprising a carbon nanotube particulate on a surface (FIG. 6, items 110 and 112), wherein the carbon nanotube particulate comprises entangled small-diameter carbon nanotubes (column 5, lines 3-6), wherein the small-diameter nanotubes have an outer diameter in a range of about 0.5 nm and about 3 nm (column 4, line 62 thru column 5, line 1), wherein the carbon nanotube particulate has a cross-sectional dimension in a range of about 0.1 micron and about 100 microns (column 5, lines 3-6).

Regarding claim 2, Jin discloses the electron emitter of claim 1 wherein the particulate has a cross-section dimension in the range of about 0.1 micron and about 3 microns (column 5, lines 3-6).

Regarding claim 3, Jin discloses the electron emitter of claim 1 wherein the carbon nanotubes are selected from the group consisting of single-walled carbon nanotubes, double-walled carbon nanotubes, triple-walled carbon nanotubes, quadruple-walled carbon nanotubes and combinations thereof (column 2, lines 53-60).

Regarding claim 4, Jin discloses the electron emitter of claim 1 wherein the carbon nanotube particulate comprises ropes of carbon nanotubes (column 4, lines 56-59).

Regarding claim 5, Jin discloses the electron emitter of claim 4 wherein the ropes have a cross-sectional dimension in a range of about 10 nm and about 50 nm (column 5, lines 3-6).

Regarding claim 6, Jin discloses the electron emitter of claim 4 wherein the ropes have a cross-sectional dimension less than 10 nm (column 2, lines 53-58 and column 9, lines 33-36).

Regarding claim 7, Jin discloses the electron emitter of claim 4 wherein the carbon nanotube particulates comprise small-diameter carbon nanotubes having more than about 10 small-diameter carbon nanotubes/ μ m surface area of the carbon nanotube particulates (column 4, line 56 thru column 5, line 6).

Regarding claim 8, Jin discloses the electron emitter of claim 4 wherein the carbon nanotube particulate on the surface has been activated by etching (column 9, lines 20-26).

Regarding claim 9, Jin discloses the electron emitter of claim 4 wherein the electron emitter is a component in a cathode of a field emission device (column 2, lines 36-39).

Regarding claim 10, Jin discloses the electron emitter of claim 10 (Examiner notes as dependent upon claim 9), wherein the field emission device is selected from the group consisting of electron tubes, amplifiers, oscillators, mixers, microwave

components, discharge initiators, laser tubes, spark gaps, controlled discharge tubes, directed energy devices, display tubes, flat-panel displays and combinations thereof (column 2, lines 36-39).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sun et al. (US Pub 2002/0171357) is cited to show an electron emitter including carbon nanotubes.

Dimitrijevic et al. (US Pub 2001/0024078) is cited to show diamond coated nanotubes and their use in electron field emitters.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie K. Walford whose telephone number is (571)-272-6012. The examiner can normally be reached on Monday-Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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